

WHAT IS CLAIMED IS:

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1. An image forming apparatus, comprising:  
a hardware resource;  
a program;  
an examining unit that examines said  
10 hardware resource;  
a configuration unit in which a relation  
between said examining unit and said program is  
configured; and  
an activating unit that activates said  
15 program having the relation with said examining unit  
based on the examination of said hardware resource.

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2. The image forming apparatus as claimed  
in claim 1, wherein said configuration unit  
configures a one-to-one relation between said  
examining unit and said program.

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3. The image forming apparatus as claimed  
in claim 1, wherein said configuration unit  
configures a one-to-"n" (n: an integer more than 1)  
relation between said examining unit and a plurality  
5 of said programs.

10 4. The image forming apparatus as claimed  
in claim 1, wherein said configuration unit  
configures an "n"-to-one (n: an integer more than 1)  
relation between a plurality of said examining units  
and said program.

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5. The image forming apparatus as claimed  
20 in claim 1, further comprising:

a storage unit in which the result of the  
examination is stored;

wherein

said examining unit determines whether the  
25 result of the examination that said examining unit is

to perform is stored in said storage unit, and uses,  
if the result of the examination that said examining  
unit is to perform is stored in said storage unit,  
the stored result of the examination.

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6. The image forming apparatus as claimed  
10 in claim 1, wherein  
said activating unit activates said  
examining unit in compliance with the relation  
configured in said configuration unit.

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7. The image forming apparatus as claimed  
in claim 6, wherein said activating unit, after  
20 activating said program, terminates said examining  
unit.

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8. The image forming apparatus as claimed  
in claim 1, wherein said examining unit determines  
whether said hardware resource exists, and outputs,  
in response to a positive determination, a normal  
5. value and outputs, in response to a negative  
determination, an abnormal value as the result of the  
examination.

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9. The image forming apparatus as claimed  
in claim 8, wherein  
said examining unit determines, if a device  
15 driver corresponding to said hardware resource can be  
successfully opened or is already opened, that said  
hardware resource exists, and determines that said  
hardware resource does not exist otherwise.

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10. The image forming apparatus as claimed  
in claim 8, wherein,  
25 in response to receipt of the normal value

output by said examining unit in the determination as  
to whether said hardware resource exists that  
operates partially or entirely as one of a printer, a  
copier, a facsimile machine, and a scanner, said  
5 activating unit activates said program corresponding  
to the one of the printer, the copier, the facsimile  
machine, and the scanner.

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11. The image forming apparatus as claimed  
in claim 1, wherein said examining unit determines  
whether said hardware resource exists, and outputs,  
15 in response to a negative determination, a normal  
value and outputs, in response to a positive  
determination, an abnormal value as the result of the  
examination.

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12. The image forming apparatus as claimed  
in claim 11, wherein  
25 in response to receipt of the normal value

output by said examining unit in the determination as to whether a hard disk drive exists, said activating unit mounts a RAM disk in compliance with the relation configured in said configuration unit.

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13. The image forming apparatus as claimed  
10 in claim 1, wherein said examining unit determines whether said hardware resource satisfies a predetermined performance requirement, and outputs, in response to a positive determination, a normal value and outputs, in response to a negative  
15 determination, an abnormal value as the result of the determination.

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14. The image forming apparatus as claimed in claim 13, wherein

in response to receipt of the normal value output by said examining unit in the determination as  
25 to whether a central processing unit satisfies a

predetermined performance requirement, said  
activating unit activates said program having the  
relation with said examining unit, and

in response to receipt of the abnormal  
5 value output by said examining unit, said activating  
unit does not activate said program having the  
relation with said examining unit.

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15. The image forming apparatus as claimed  
in claim 13, wherein

said activating unit, in response to  
15 receipt of the normal value from said examining unit  
as the result of a memory check, activates said  
program related to said examining unit in said  
configuration unit, and in response to receipt of the  
abnormal value from said examining unit as the result  
20 of the memory check, does not activate said program.

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16. The image forming apparatus as claimed

in claim 13, wherein

said configuration unit configures the  
relation between said examining unit and one of a  
directory in which said program is located and an  
5 upper directory thereof; and

said activating unit, in response to  
receipt of the normal value as a result of the  
determination, mounts the directory or the upper  
directory related to said examining unit, and in  
10 response to receipt of the abnormal value as the  
result of the determination, mounts neither the  
directory nor the upper directory.

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17. The image forming apparatus as claimed  
in claim 2, wherein

said examining unit determines whether a  
20 predetermined identifier of said hardware resource  
satisfies a predetermined condition, outputs a normal  
value in response to a positive determination, and  
outputs an abnormal value in response to a negative  
determination.

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18. The image forming apparatus as claimed  
in claim 17, wherein

said examining unit determines whether an  
identifier stored in an SD card matches an identifier  
5 of a slot to which the SD card is inserted, outputs a  
normal value in response to a positive determination,  
and outputs an abnormal value in response to a  
negative determination.

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19. The image forming apparatus as claimed  
in claim 17, wherein

15 said activating unit executes said program  
configured in said configuration unit as related to  
said examining unit in response to receipt of the  
normal value from said examining unit as the result  
of the determination, and does not execute said  
20 program configured in said configuration unit as  
related to said examining unit in response to receipt  
of the abnormal value from said examining unit as the  
result of the determination.

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20. The image forming apparatus as claimed  
in claim 5, wherein

said storage unit is a memory region that  
said examining unit can directly access.

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21. The image forming apparatus as claimed  
10 in claim 1, wherein

said activating unit is activated by an  
operating system that is activated after the power of  
the image forming apparatus is turned on.

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22. The image forming apparatus as claimed  
in claim 1, wherein said program further comprises:

20 an application program used for image  
forming;

a control service program that manages said  
hardware resource used for the image forming; and  
an operating system.

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23. A method of activating a program for an image forming apparatus including a hardware resource, wherein the program causes the hardware resource to form an image, comprising the steps of:

5                interpreting a configuration unit in which is configured a relation between the program and an examining unit that examines the hardware resource;

                 activating the examining unit based on a result of the interpretation; and

10               activating the program having the relation with the examining unit based on a result of the examination by the examining unit.

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24. A computer program that causes a computer having a hardware resource and a program to function as:

20               an examining unit that examines said hardware resource;

                 a configuration unit in which a relation between said examining unit and said program is configured; and

25               an activating unit that activates said

program having the relation with said examining unit based on the examination.

5

25. An image forming apparatus, comprising:  
a hardware resource;  
a program;

10 a configuration unit in which a relation  
between examining processing and said program is  
configured; and

an activating unit that performs the  
examining processing and activates said program  
15 having the relation with the examining processing  
based on the result of the examining processing.

20

26. The image forming apparatus as claimed  
in claim 25, wherein said configuration unit  
configures a one-to-one relation between the  
examining processing and said program.

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27. The image forming apparatus as claimed  
in claim 25, wherein said configuration unit  
configures a one-to-"n" (n: an integer more than 1)  
relation between the examining processing and a  
5 plurality of said programs.

10 28. The image forming apparatus as claimed  
in claim 25, wherein said configuration unit  
configures an "n"-to-one (n: an integer more than 1)  
relation between the examining processing and said  
program.

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29. The image forming apparatus as claimed  
20 in claim 25, further comprising:

a storage unit in which the result of the  
examining processing is stored;

wherein

said activating unit determines whether the  
25 result of the examining processing that said

activating unit is to perform is stored in said  
storage unit, and uses, if the result of the  
examining processing that said activating unit is to  
perform is stored in said storage unit, the stored  
5 result of the examining processing.

10                   30. The image forming apparatus as claimed  
in claim 25, wherein  
                  said activating unit performs the examining  
processing in accordance with the relation configured  
in said configuration unit.

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                  31. The image forming apparatus as claimed  
20 in claim 30, wherein said activating unit, after  
activating said program, terminates the examining  
processing.

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32. The image forming apparatus as claimed  
in claim 25, wherein

said activating unit determines whether  
said hardware resource exists by performing the  
5 examining processing, and acquires, in response to a  
positive determination, a normal value and acquires,  
in response to a negative determination, an abnormal  
value as the result of the examining processing.

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33. The image forming apparatus as claimed  
in claim 32, wherein

15 if a device driver corresponding to said  
hardware resource can be successfully opened or is  
already opened, said activating unit determines as  
the result of the examining processing that said  
hardware resource exists and otherwise determines  
20 that said hardware resource does not exist.

25 34. The image forming apparatus as claimed

in claim 32, wherein,

in response to acquisition of the normal  
value in the determination as to whether said  
hardware resource exists that operates partially or  
5 entirely as one of a printer, a copier, a facsimile  
machine, and a scanner, said activating unit  
activates said program corresponding to the one of  
the printer, the copier, the facsimile machine, and  
the scanner.

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35. The image forming apparatus as claimed  
15 in claim 25, wherein said activating unit determines  
whether said hardware resource exists by performing  
the examining processing, and acquires, in response  
to a negative determination, a normal value and  
acquires, in response to a positive determination, an  
20 abnormal value as the result of the examination.

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36. The image forming apparatus as claimed



in claim 35, wherein

in response to acquisition of the normal  
value in the determination as to whether a hard disk  
drive exists, said activating unit mounts a RAM disk  
5 in accordance with the relation configured in said  
configuration unit.

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37. The image forming apparatus as claimed  
in claim 25, wherein said activating unit determines  
whether said hardware resource satisfies a  
predetermined performance requirement by performing  
15 the examining processing, and acquires, in response  
to a positive determination, a normal value and  
acquires, in response to a negative determination, an  
abnormal value as the result of the determination.

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38. The image forming apparatus as claimed  
in claim 37, wherein

25 in response to acquisition of the normal

value in the determination whether a central  
processing unit satisfies a predetermined performance  
requirement, said activating unit activates said  
program having the relation with the examining  
5 processing, and

in response to acquisition of the abnormal  
value, said activating unit does not activate said  
program having the relation with the examining  
processing.

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39. The image forming apparatus as claimed  
15 in claim 37, wherein

said activating unit, in response to  
acquisition of the normal value as the result of a  
memory check, activates said program related to the  
examining processing designated in said configuration  
20 unit, and in response to acquisition of the abnormal  
value as the result of the memory check, does not  
activate said program.

25

40. The image forming apparatus as claimed  
in claim 37, wherein

said configuration unit configures the  
relation between the examining processing and one of  
5 a directory in which said program is located and an  
upper directory thereof; and

said activating unit, in response to  
acquisition of the normal value as a result of the  
determination, mounts the directory or the upper  
10 directory related to the examining processing, and in  
response to acquisition of the abnormal value as the  
result of the determination, mounts neither the  
directory nor the upper directory.

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41. The image forming apparatus as claimed  
in claim 26, wherein

20 said activating unit determines whether a  
predetermined identifier of said hardware resource  
satisfies a predetermined condition by performing the  
examining processing, acquires a normal value in  
response to a positive determination, and acquires an  
25 abnormal value in response to a negative

determination.

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42. The image forming apparatus as claimed  
in claim 41, wherein

said activating unit determines whether an  
identifier stored in an SD card matches an identifier  
10 of a slot to which the SD card is inserted, acquires  
a normal value in response to a positive  
determination, and acquires an abnormal value in  
response to a negative determination.

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43. The image forming apparatus as claimed  
in claim 41, wherein

20 said activating unit executes said program  
configured in said configuration unit as related to  
the examining processing in response to acquisition  
of the normal value as the result of the  
determination, and does not execute said program  
25 configured in said configuration unit as related to

the examining processing in response to acquisition  
of the abnormal value as the result of the  
determination.

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44. The image forming apparatus as claimed  
in claim 29, wherein

10               said storage unit is a memory region that  
said activating unit can directly access.

15

45. The image forming apparatus as claimed  
in claim 25, wherein

                  said activating unit is activated by an  
operating system that is activated after the power of  
20   the image forming apparatus is turned on.

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46. The image forming apparatus as claimed

in claim 25, wherein said program further comprises:

an application program used for image forming;

a control service program that manages said  
5 hardware resource used for the image forming; and  
an operating system.

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47. A method of activating a program for an image forming apparatus including a hardware resource, wherein the program causes the hardware resource to form an image, comprising the steps of:

15 interpreting a configuration unit in which is configured a relation between the program and examining processing that examines the hardware resource;

performing the examining processing based  
20 on a result of the interpretation; and

activating the program having the relation with the examining processing based on a result of the examination by an activating unit.

25

48. A computer program that causes a computer having a hardware resource and a program to function as:

5 a configuration unit in which a relation between examining processing and said program is configured; and

10 an activating unit that performs the examining processing and activates said program having the relation with the examining processing based on the examination.

15 49. An image forming apparatus, comprising:  
a hardware resource;

a slot that accepts a recording medium in which a program to be mounted and activated is stored; and

20 an activating unit that compares first machine information indicating an apparatus model corresponding to said program with second machine information indicating the apparatus model of the image forming apparatus, and if the first machine  
25 information and the second machine information match,

activates the program stored in the recording medium.

5

50. The image forming apparatus as claimed  
in claim 49, wherein

said activating unit reads a configuration  
file stored in the recording medium in said slot, and  
10 acquires the first machine information from a mount  
point of the program designated in the configuration  
file.

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51. The image forming apparatus as claimed  
in claim 49, wherein

said activating unit acquires the second  
20 machine information by issuing a system call.

25

52. The image forming apparatus as claimed



in claim 49, wherein

said activating unit compares the first machine information and the second machine information, activates the program stored in the recording medium if said activating unit determines  
5 that the first machine information and the second machine information match, and does not activate the program stored in the recording medium if said activating unit determines that the first machine  
10 information and the second machine information do not match.

15

53. The image forming apparatus as claimed in claim 49, wherein

if said activating unit determines that the first machine information and the second machine  
20 information match, said activating unit activates the program that causes the image forming apparatus to function as one or more of a printer, a copier, a facsimile machine, and a scanner.

25

54. The image forming apparatus as claimed  
in claim 49, wherein

said activating unit is activated by an  
operating system activated in response to turning on  
5 the image forming apparatus.

10 55. The image forming apparatus as claimed  
in claim 50, wherein

said activating unit acquires the first  
machine information from a module information file  
located in a mount point of the program.

15

56. An image forming apparatus, comprising:  
20 a hardware resource;  
a slot that accepts a recording medium in  
which a program to be mounted and activated is  
stored; and

an activating unit that compares first  
25 identification information of a slot into which the

recording medium is to be inserted and second  
identification information of a slot into which the  
recording medium is actually inserted, and activates  
the program stored in the recording medium if said  
5 activating unit determines that the first  
identification information and the second  
identification information match.

10

57. The image forming apparatus as claimed  
in claim 56, wherein

said activating unit reads a configuration  
15 file stored in the recording medium in said slot, and  
acquires the first identification information from  
the configuration file.

20

58. The image forming apparatus as claimed  
in claim 56, wherein

said activating unit acquires the second  
25 identification information by issuing a system call.

59. The image forming as claimed in claim  
56, wherein

said activating unit compares the first  
5 identification information and the second  
identification information, activates the program  
stored in the recording medium if said activating  
unit determines that the first identification  
information and the second identification information  
10 match, and does not activate the program stored in  
the recording medium if said activating unit  
determines that the first identification information  
and the second identification information do not  
match.

15

60. The image forming apparatus as claimed  
20 in claim 57, wherein

if the first identification information is  
not contained in the configuration file read from the  
recording medium, said activating unit activates the  
program to be mounted and activated stored in the  
25 recording medium.

61. The image forming apparatus as claimed  
in claim 56, wherein

if said activating unit determines that the  
5 first identification information and the second  
identification information match, said activating  
unit activates the program to be mounted and  
activated that causes the image forming apparatus to  
function as one or more of a printer, a copier, a  
10 facsimile machine, and a scanner.

15 62. The image forming apparatus as claimed  
in claim 56, wherein

said activating unit is activated by an  
operating system activated in response to turning on  
the image forming apparatus.

20

63. A method of activating a program for an  
25 image forming apparatus having a slot into which a

recording medium is inserted, comprising the steps  
of:

comparing first machine information  
indicating an apparatus model corresponding to a  
5 program to be mounted and activated stored in the  
recording medium with second machine information  
indicating an apparatus model of the image forming  
apparatus; and

activating, if a determination is made that  
10 the first machine information and the second machine  
information match, the program to be mounted and  
activated.

15

64. A method of activating a program for an  
image forming apparatus having a slot into which a  
recording medium is inserted, comprising the steps  
20 of:

comparing first identification information  
of the slot into which the recording medium is to be  
inserted with second identification information of  
the slot into which the recording medium is actually  
25 inserted; and

activating, if a determination is made that the first identification information and the second identification information match, the program to be mounted and activated.

5

65. A computer program that causes a  
10 computer having a hardware resource and a slot that accepts a recording medium in which a program to be mounted and activated is stored, to function as:

an activating unit that compares first  
machine information indicating an apparatus model  
15 corresponding to said program with second machine information indicating the apparatus model of the image forming apparatus, and if the first machine information and the second machine information match, activates the program stored in the recording medium.

20

66. A computer readable recording medium  
25 storing the computer program as claimed in claim 65.

67. A computer program that causes a  
computer having a hardware resource and a slot that  
accepts a recording medium in which a program to be  
5 mounted and activated is stored, to function as:

an activating unit that compares first  
identification information of a slot into which the  
recording medium is to be inserted and second  
identification information of a slot into which the  
10 recording medium is actually inserted, and activates  
the program stored in the recording medium if said  
activating unit determines that the first  
identification information and the second  
identification information match.

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68. A computer readable recording medium  
20 storing the computer program as claimed in claim 67.